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मानक

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Jawaharlal Nehru

“Step Out From the Old to the New”

IS 7605 (1986): Portable Pneumatic Chippers [PGD 8:
Pneumatic Tools]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard
SPECIFICATION FOR
PORTABLE PNEUMATIC CHIPPERS
(First Revision)

1. Scope — This standard covers the requirements for portable pneumatic chippers.

2. Terminology

2.1 Chipper — A percussive piston tool in which potential energy of compressed air acting on a free piston is converted into kinetic energy. The piston having this converted kinetic energy, strikes on the cutting chisel thus imparting this energy to the cutting chisel for the purpose of chipping and caulking metals.

2.2 Valves

2.2.1 Valveless — The inlet and outlet of air is controlled by the reciprocating movement of the piston.

2.2.2 Flutter valve — Air inlet is controlled by a single valve body (ball, plate or ring) which is operated by pressure differential created by movement and position of the piston. Outlet is by ports in the cylinder.

2.2.3 Direct flow solid spool valve — Air inlet is controlled by a spool type valve body which is operated by pressure differential created by movement and position of the piston. Outlet is by ports in the cylinder.

2.2.4 Direct flow hollow spool valve — Similar to 'direct flow solid spool valve' (see 2.2.3) but with hollow valve body to allow the piston to pass through.

2.3 Gauge Pressure — Steady pressure of compressed air measured within three metres from the Inlet of the chipper.

2.4 Air Consumption — Volume of air, corrected to standard atmospheric conditions of testing according to IS : 196-1966 'Atmospheric conditions for testing (revised)', consumed by the chipper during pellet test.

3. Nominal Size and Recommended Mass — Nominal size recommended mass of chippers shall be as follows:

<i>Nominal Size</i>	<i>Mass kg</i>
1	6.0
2	6.5
3	7.5
4	8.5

4. Material — Material shall be of uniform quality and shall be free from defects and imperfections that may effect the serviceability of finished product.

5. General Requirements

5.1 Lubrication — Parts which require lubrication shall be properly enclosed so as to prevent entrance of foreign particles and leakage of lubricant. Working parts exposed to wear shall be of sufficient hardness to withstand the service required.

5.2 Air Inlet Connection

5.2.1 Air inlet connection shall be fitted with an air strainer or screen forming a part of nipple/bush which shall be effective in retaining solid particles in compressed air supply and shall be readily cleanable.

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5.2.2 Air inlet connection shall have pipe threads of size Rc $\frac{1}{2}$ according to IS : 554-1975 'Dimensions for pipe threads where pressure tight joints are required on the threads (second revision)'.

5.3 *Handles* — The handles shall be of the types as shown in Fig. 1 and 2.

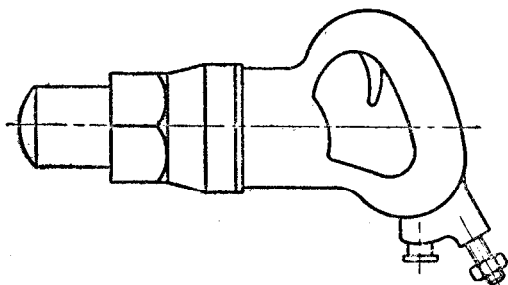


FIG. 1 OPEN TYPE WITH OUTSIDE TRIGGER

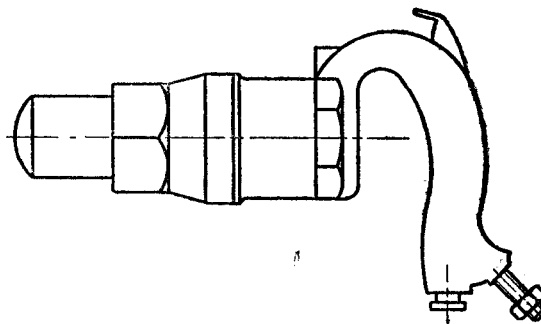


FIG. 2 CLOSED TYPE WITH INSIDE TRIGGER

5.3.1 The handle and cylinder barrel shall be locked together by means of a readily adjustable locking device in a manner that they will not become loose in service.

5.4 *Throttle* — A non-leaking, air balanced, manual throttle shall be provided for admitting and shutting off the supply of compressed air. The throttle trigger may be of either inside or outside type (see Fig. 1 and 2).

5.5 Chippers shall be suitable for adopting the chisel shanks according to IS : 7446-1974 'Dimensions for chisel shanks for pneumatic chippers'.

5.6 *Instruction Manual* — Each tool shall be supplied with instruction manual. Data to be provided in the instruction manual shall be in accordance with IS : 11609-1986 'Technical supply conditions for pneumatic tools'.

6. *Workmanship and Finish* — Chippers shall be of rugged construction so as to withstand, without injury, treatment likely to be encountered under general service conditions and shall be free from all imperfections which may effect the serviceability of the tools.

7. *Designation* — A portable pneumatic chipper of nominal size 2 shall be designated as:
Pneumatic Chipper 2 IS : 7605

8. Tests

8.1 Performance Test

8.1.1 *Pellet test* — This test consists of operating the chipper for a specified period to beat down a cylindrical pellet of steel (see 8.1.1.1 to 8.1.1.5) and measuring the compression (reduction in length) of the pellet. The compression shall be as given in 8.1.1.5.

8.1.1.1 The test rig shall consist of a firm and solid steel base upon which a removable substantial pot, with hardened steel bush and having a vertical opening of 24 mm diameter, is mounted with dowels (see Fig. 3).

8.1.1.2 The chipper shall be fitted with a blank steel plunger of 22 mm in diameter, hardened to 600 HV throughout.

8.1.1.3 The pellet 12.7 mm in diameter, 10 mm in length and made of steel 20 C 8 of IS : 1570 (Part 2)-1979 'Schedules for wrought steels; Part 2 Carbon steels (unalloyed steels)', shall be placed vertically in the pot. The pellet shall have hardness of 125-150 HV.

8.1.1.4 The chipper shall be placed in position so that the blank steel plunger rests on the upper end of the pellet. The chipper shall be operated for 5 seconds (measured with a stop-watch) at 6.0 ± 0.5 bar air pressure. The chipper and the plunger shall then be released and the pellet withdrawn from the pot.

8.1.1.5 The compression of the pellet shall be measured by means of a micrometer and the recorded compression shall be within minus 5 percent of the declared values.

8.1.2 *Air consumption test* — The water displacement meter or any other equally suitable instrument shall be used to determine the quantity of air consumed per minute at 6.0 ± 0.5 bar air pressure measured at a distance of not more than 3 m from the tool while the pellet test is being performed as specified in 8.1.1. The air consumption corrected to standard atmospheric conditions of testing according to IS : 196-1966 shall be within +5 percent of the declared values.

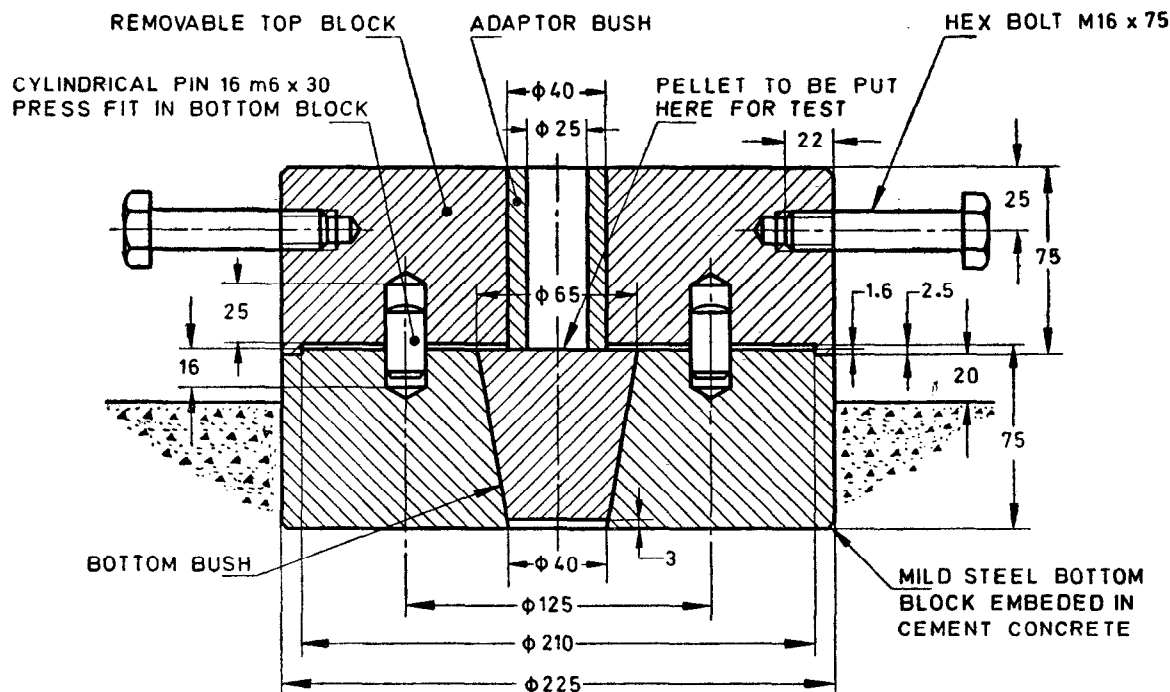


FIG. 3 TEST RIG FOR PELLET TEST

8.1.3 Operation test — Each chipper shall be tested for easy starting and stopping. It shall also be tested for easy fitment and removal of the chisel in the bushing. The chipper shall show no flaws which may have been developed during testing.

8.2 Endurance Test

8.2.1 For type approval — Each sample conforming to pellet test shall be run on the test rig to disseminate energy for 100 h in the manufacturers test room (100 h run need not be at a stretch and may be done over a period) after which the tool shall be dismantled and all parts shall be examined. No part shall either break during test or be found broken, cracked or deformed.

8.2.2 For routine testing — One percent, the minimum being one, of tools on order, if the order is of 50 pieces or more, shall be run on the test rig for 15 hours run (need not be at a stretch) after which the tool shall be dismantled and all parts shall be examined. No part shall either break during field use or be found broken, cracked, deformed or show signs of excessive wear on examination.

9. Marking — The pneumatic chipper shall be marked with type, rated working pressure range, serial number and manufacturer's name or trade-mark.

9.1 ISI Certification Marking — Details available with the Indian Standards Institution.

10. Packing — Before packing, the inlet, exhaust and other openings of each tool shall be adequately protected against entry of dust and other harmful material. Pneumatic chippers shall be packed in accordance with IS : 11609-1986.

EXPLANATORY NOTE

This standard was first published in 1975. It does not cover weld flux chippers and needles scaling hammers. In view of the experience gained in this field, the revision has been taken up. Alteration have been made in nominal sizes. Pellet and air consumption test requirements have been tolerated on the declared values of the manufacturers.